DNR Orders in the OR

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Abstract

Patients with do-not-resuscitate (DNR) orders may elect to have palliative surgery. Should DNR orders be automatically suspended in the operating room (OR)? This article addresses the following issues:

(1) Ethics of DNR orders
(2) The American Society of Anesthesiology's Ethical Guidelines for the Anesthesia Care of Patients with Do-Not-Resuscitate Orders or Other Directives that Limit Treatment
(3) The Statement of the American College of Surgeons on Advance Directives by Patients
(4) Current hospital policies regarding perioperative DNR policies in Hawaii
(5) Recommendations to improve DNR policies in the OR.

Hypothetical Case Scenario

It is three o'clock in the morning when an old woman slowly stumbles into the emergency room. "I don't feel too good," she whispers to the triage nurse. The nurse recognizes the pale lady immediately – it is Mrs. Hoku Keawe, a 78 year-old woman with colon cancer metastatic to the liver and a frequent visitor to the emergency room for intractable pain. This visit would be different.

Mrs. Keawe hunches over, grabs her abdomen, and groans. The physician makes a prompt diagnosis of acute bowel obstruction. You, the surgeon on-call, deem emergent surgery appropriate. Mrs. Keawe previously consented to a DNR ("No-Code") status. However, she and her family agree to palliative surgery to alleviate the bowel obstruction.

In the operating room, you are aware she has an allergy to penicillin, but mistakenly order Zosyn (piperacillin/tozabactam). A few minutes after the administration of the antibiotic, she develops angioedema, bronchospasm, and hypotension followed by cardiac arrest. Since this complication is iatrogenic, you feel justified in overriding her DNR status and begin resuscitation, complete with epinephrine, volume infusion and multiple electroshocks.

Mrs. Keawe is now in the intensive care unit in critical condition. Later that morning, you check on her progress. On physical exam, she is comatose without any pupillary reflexes but hemodynamically stable. For two weeks, Mrs. Keawe remains in this vegetative state. You explain the bleak prognosis to her family, and they tearfully agree to withdraw mechanical ventilation.

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Background: The Science & Ethics of the DNR Order

In 1960, "closed-chest cardiac massage" changed medicine. Previously, only open thoracotomy and direct cardiac massage achieved successful cardiac resuscitation following a cardiac arrest[1] (also called code 500, code-blue, or simply "code"). Combined with artificial respiration, closed-chest cardiac massage initially boasted a 70% survival rate. After forty years of utilization, CPR fully revived some patients after an unforeseen cardiopulmonary arrest. However, for people with progressive chronic illnesses, CPR may simply prolong death. The actual effectiveness of CPR depends on the patient's profile and the environment where CPR is employed. Only 14% of patients in the general wards leave the hospital alive following CPR.[2]

The results of CPR can be devastating and include severe irreversible neurologic injuries. After CPR, a comatose patient without pupillary reflexes has only a 6% likelihood of regaining consciousness and virtually no chance of functioning independently.[3] Regaining consciousness is also highly unlikely for patients without corneal reflexes after the first day following CPR.

The initial CPR standards acknowledged that "CPR is not indicated in certain situations, such as in cases of terminal irreversible illness where death is not unexpected....Resuscitation in these circumstances may represent a positive violation of an individual's right to die with dignity."[4]

A patient's decision to forgo CPR efforts is an example of autonomy. Autonomy means that "patients have the right to choose actions that are consistent with their values, goals, and life plan, even if their choices disagree with the wishes of family members or the recommendations of their physicians."[5] Therefore, after a patient discusses the prognosis with the physician, the patient may consent to a do-not-resuscitate (DNR) status. A DNR order (also referred to as "No-Code") states that in the event of a cardiac or respiratory arrest, no CPR efforts would be undertaken.

Terminally ill patients may elect a DNR status and choose a palliative course of action. However, surgery can be part of the palliative care plan. In 1991, approximately 15% of patients with DNR orders had a surgical procedure.[6] Most interventions are intended to improve comfort and/or nursing care. However, when a terminally ill patient with a DNR order undergoes surgery, how should physicians deal with the patient's code status, especially if an iatrogenic cardiac arrest occurs?

Special Conditions in the OR

CPR's effectiveness increases in the OR.[7] The OR is a controlled, artificial environment where drugs and procedures significantly alter cardiopulmonary function and increase the risk of a cardiopulmonary arrest.[8] But the OR is also heavily monitored, and problems are diagnosed quickly. Therefore, better resuscitation results. Many

studies show a 50% survival from CPR for perioperative cardiac arrests, versus an 8-14% survival from in-hospital CPR.[9,10,11,13]

When anesthesia causes a cardiac arrest, resuscitation is usually easily reversible with no adverse sequel. A Swedish study retrospectively assessed 250,000 surgical cases between 1967-1984. It reported that 65% of the patients who had a cardiac arrest perioperatively were successfully resuscitated. When anesthesia caused the arrest, the recovery rate jumped to 92%. The causes of anesthetically induced cardiac arrest included esophageal intubation, disconnection from mechanical ventilation, or prolonged exposure to high concentrations of anesthetics.[14]

Iatrogenic Cardiac Arrest

The majority of physicians feel it is acceptable to allow a patient to die from a terminal disease but believe it is inappropriate for a patient to die as a direct result of an anesthetic or surgical accident.[15] The potential conflict of adhering to a DNR order or reversing an iatrogenic arrest not uncommonly arises during surgery. Many anesthesiologists and surgeons are uncomfortable handling these DNR conflicts.

In 1999, Casarett et al assessed whether physicians were more likely to override a DNR order if a hypothetical cardiac arrest was caused iatrogenically. Their survey revealed that 69% of physicians were very likely to override a DNR order if the cardiac arrest was due to physician error. However, only 8% said they would override a DNR order if the cardiac arrest were due to the underlying disease.[16]

The authors suggested three explanations why many physicians would decide to override a pre-existing DNR order: (1) concern for malpractice litigation, (2) feelings of guilt or responsibility, and (3) the belief that patients do not consider the possibility of an iatrogenic cardiac arrest when they consent to a DNR order. Physicians may also believe a "properly negotiated DNR order does not apply to all foreseeable circumstances."[17]

Some ethicists suggest that "an iatrogenic cause for an illness does not make it permissible to override a patient's prior refusal of treatment."[18] Neither the axiom to "do no harm" nor the likelihood of successful resuscitation would justify overriding a patient's wishes, since "errors should not alter ethical obligations to respect a patient's refusal of treatment."[19]

National Guidelines of American Society of Anesthesiology and American College of Surgeons

Prior to the 1990s, DNR orders were routinely suspended when a patient entered the operating room. This practice has since been re-evaluated by the American Society of Anesthesiology and the American College of Surgeons because of concerns that such a policy is a violation of patient autonomy.

American Society of Anesthesiology (ASA)

In 1993, the ASA adopted and approved the *Ethical Guidelines for the Anesthesia Care of Patients with Do Not Resuscitate Orders or Other Directives that Limit Treatment.* The ASA stated that "an essential element of preoperative preparation and perioperative care for patients with Do-Not-resuscitate (DNR) orders...is communication among involved parties."[20]

The *Guidelines* established that "policies automatically suspending DNR orders or other directives that limit treatment prior to procedures involving anesthetic care may not sufficiently address a patient's rights or self-determination in a responsible and ethical manner. Such policies, if they exist, should be reviewed and revised, as necessary, to reflect the content of these guidelines."[21]

The ASA urged that "prior to procedures requiring anesthetic care, any existing directives to limit the use of resuscitation procedures should, when possible, be reviewed with the patient or designated surrogate."[22] During the review, a patient could temporarily modify the DNR status. In 1993, the *Guidelines* initially recommended that physicians offer patients two choices for the management of their existing DNR order during the perioperative period:

(1) "Full attempt at resuscitation."
- The patient or designated surrogate "may request the full suspension of existing directives during the anesthetic and immediate postoperative period, thereby consenting to the use of any resuscitation procedures that may be appropriate to treat clinical events that occur during such time"

(2) "Limited attempt at resuscitation defined with regard to specific procedures" (also known as "partial code")
- The patient or designated surrogate may "elect to continue to refuse certain specific resuscitation procedures (i.e. chest compressions, defibrillation or tracheal intubation)."
- The anesthesiologist would explain which resuscitation procedures are necessary for surgery and which are not.

The response to the 1993 ASA *Guidelines* was a "lukewarm acceptance, frequent misunderstanding, and inconsistent application."[23] In 1996, Bastron et al modified the ASA *Guidelines* to two options where (1) patients or their surrogate could suspend their DNR status during the perioperative period or (2) patients or their surrogate could delegate all decisions regarding resuscitation solely to the anesthesiologist.[24] Bastron's alternatives were criticized for not allowing patients any choice in defining their treatment since either option gave the anesthesiologist the power to decide the patient's fate.

Two years later, in 1998, the American Society of Anesthesiologists' House of Delegates amended the *Guidelines* to include a third option in the perioperative management of a patient's DNR status. A patient or surrogate could have a "limited attempt at resuscitation defined with regard to the patient's goals and values....This option may allow the anesthesiologist and surgical team to use clinical judgment in determining which resuscitation procedures are appropriate in the context of the situation and the patient's stated goals and values." The amended *Guidelines* provide the following example: "Some patients may want full resuscitation procedures to be used to manage adverse clinical events that are believed to be quickly and easily reversible, but to refrain from treatment for conditions that are likely to result in permanent sequel, such as neurologic impairment or unwanted dependence upon life-sustaining technology."

The advantages of this third option are that the anesthesiologist is given more "procedural flexibility and the context of the arrest plays a larger role in determining the clinical response."[25] Nonetheless, there are also disadvantages to this goal-oriented approach. An anesthesiologist's interaction with the patient is usually brief, and it may be difficult to fully comprehend a patient's goals, values, and

objectives in a short amount of time. Another concern about the goal-oriented approach is whether "knowledge of the patient's goals is actually an accurate predictor of what the patient would want." [26]

A further concern of partial codes is their decreased effectiveness. The "Advanced Cardiac Life Support (ACLS) has been shown to be effective only when all resuscitation components are provided. These include ventilation, chest compression, drug therapy, electrical cardioversion, etc. Omitting certain procedures during CPR makes no sense and will simply reduce the chance for success."[27] With a partial code, "death is virtually a foregone conclusion."[28]

The ASA *Guidelines* recommends that "the medical record should also indicate if or when the original, pre-existent directive to limit the use of resuscitation procedures will be reinstated. This should generally occur when the patient leaves the post-anesthesia care unit or when the patient has recovered from the acute effects of anesthesia and surgery."[29]

American College of Surgeons (ACS)

The ACS and the Association of Operating Room Nurses also adopted similar policies on re-evaluating the DNR status in the operating room. In 1994, the *Statement of the American College of Surgeons on Advance Directives by Patients* acknowledged that patients with DNR orders may become candidates for surgical procedures and that "when such patients undergo surgical procedures and the accompanying sedation or anesthesia, they are subjected to new and potentially correctable risks of cardiopulmonary arrest."[30] Like the ASA, the ACS agrees that "many of the therapeutic actions employed in resuscitation (for example, intubation, mechanical ventilation, and administration of vasoactive drugs) are also an integral part of anesthetic management, and it is appropriate that the patient be so informed."[31,32]

The ACS states "policies that lead either to the automatic enforcement of all DNR orders and requests or to disregarding or automatic cancellation of such orders and requests during the operation and recovery period may not sufficiently address a patient's right to self-determination. An institutional policy of automatic cancellation of the DNR status in cases where a surgical procedure is to be carried out removes the patient from appropriate participation in decision making. Automatic enforcement without discussion and clarification may lead to inappropriate perioperative and anesthetic management."[33]

The ACS considers "the best approach is a policy of required reconsideration of the previous advance directives."[34] Like the ASA, the ACS asserts that "the patient and physicians who will be responsible for the patient's care should discuss the new risks and the approach to potential life-threatening problems during the perioperative period."[35,36] However, unlike the ASA, the ACS does not list any specific alternatives in the perioperative management of a patient's DNR status.

Applying National Guidelines to Our Hypothetical Case

Several controversial issues arise when we apply the national guidelines to our hypothetical case involving Mrs. Keawe, the 78 year-old woman with metastatic colon cancer. First, Mrs. Keawe had a pre-existing DNR order. Prior to undergoing surgery, her DNR status was not reevaluated by her physicians. In effect, Mrs. Keawe's self-determination was not addressed and may have been violated when the physician provided CPR after her cardiac arrest was caused by an iatrogenic event.

According to the ASA and ACS guidelines, the physician should have reviewed with Mrs. Keawe her DNR status, discussed with her the potential risks of surgery & anesthesia, and explained the effectiveness of CPR should the need arise. The physician would then obtain new specific perioperative orders regarding CPR. Mrs. Keawe may or may not have wished to alter her DNR status, even if the arrest was iatrogenic. Such clear instruction would have enabled the surgeon and anesthesiologist to proceed with full understanding and respect of the patient's wishes.

Hawaii's DNR Policies in the OR

We were able to review the most recent official DNR/No CPR policies of nine hospitals* in Hawaii and examined the following five issues:

(1) Are DNR orders automatically suspended in the operating room?
(2) Who obtains the new code status? Surgeon? Anesthesiologist? Both?
(3) What choices do we offer the patient?
(4) How long does the new code status last?
(5) Is there a resolution process when a patient's code status conflicts with the physician's views?

Are DNR orders automatically suspended?

Hawaii's hospital policies fall into three main categories: (1) automatic suspension of DNR status during perioperative period, (2) encouraged discussion of code status with the patient, and (3) mandatory discussion of code status with the patient.

Only two hospitals state that "all previous orders are terminated when patients go to surgery." Almost half of the hospitals require a mandatory discussion of code status and use the following language: "the surgeon and anesthesiologist must discuss with the patient or the patient's proxy whether to continue the No CPR order perioperatively." The remaining three hospitals encourage but do not mandate discussion of the patient's code status.

Who obtains the new code status?

Most of the policies recommend that both the anesthesiologist and surgeon should discuss the DNR status with a patient or designated surrogate. Two of the policies stated that it was the "surgeon's obligation" to reevaluate the code status with the patient. One hospital asserted that "all physicians caring for a patient (e.g., the attending physician, surgeon, and anesthesiologist) should confer about whether they think a DNR order should be continued. One of them should then discuss the DNR order with the patient and/or the patient's surrogate preoperatively and decide whether to continue the orders."

What choices do we offer the patient?

According to the ASA, a patient should be offered three alternatives (full suspension of DNR status, limited resuscitation defined with regard to specific procedures, and limited resuscitation defined with regard to the patient's goals & values). None of Hawaii's hospitals specifically provide for all three alternatives.

A couple of hospitals offer two of the three alternatives: (1) continuance of DNR status with limited attempt at resuscitation defined with regard to specific procedures and (2) full suspension of DNR order perioperatively.

About half of the hospitals offer a single alternative: full suspension of the DNR order perioperatively. One hospital does not specifically offer any alternatives, stating instead that "the physician who will be responsible for the patient's care during the procedure should discuss the new risks and the approach to potential life-threatening problems during the perioperative period. The results of the discussion should be documented in the record."

How long does the new code status last?

Only two hospital policies are specific and clear about the duration of a new code status with language as follows: "if the patient or patient's proxy desires to have the No CPR order suspended perioperatively, the No CPR order shall remain in effect until the anesthesiologist begins to administer anesthesia and shall be reinstated by written order of the patient's attending physician upon the patient's discharge from the recovery room or at such other time as the attending physician determines appropriate." Most of Hawaii's hospitals do not outline specific time limits.

Is there a resolution process for conflicts?

The majority, but not all of the hospitals provide a specific resolution process for ethical conflicts; e.g. "no healthcare professional may be forced to participate in an operation for a patient who desires the No CPR order to continue perioperatively. If a treating professional declines to honor a No CPR order in the perioperative setting, he or she must...find a replacement so that the patient will not have to choose between temporarily suspending the No CPR order during surgery or foregoing surgery."

Summary Points

Based on our review of this subject, we offer the following guidelines:

1. Overriding a patient's DNR wish may violate his/her right to self-determination. DNR orders should therefore not be automatically suspended in the OR.
2. Both the surgeon & anesthesiologist must discuss with the patient the additional OR risks, including iatrogenically induced cardiopulmonary arrest. The patient should also be made aware of the markedly improved chance of successful perioperative resuscitation.
3. The surgeon & anesthesiologist should adhere to the new DNR or full code order per patient's wishes. If both surgeon & anesthesiologist are unable to meet with the patient at the same time, these physicians should confer with each other preoperatively to ensure a common understanding of the patient's DNR status.
4. ACLS has been shown to be effective only when all resuscitation components are employed. Therefore, a patient should be offered one alternative to their DNR status – full attempt at resuscitation.
5. Post-operative reinstatement of original DNR status should be clearly determined and documented. Normally this is upon discharge from the recovery room to the general hospital ward.
6. In the event of a conflict, the surgical team is obligated to transfer the patient to another team willing to accept the patient's code status.

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